REMARKS

ON THE

FORMS OF LOCAL INJURIES JUSTIFYING THE AMPUTATION OF A LIMB.

BY F. C. SKEY, ESQ., F.R.S.,
SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

To the real student of Medicine or Surgery, the wards of a large hospital like St. Bartholomew's furnish an uninterrupted current of valuable knowledge throughout the year. There is no limit to this interest prescribed by the medical session; the current is unremitting, the supply interminable and exhaustless. As a teacher of Surgery to young men of less experience than myself, I would endeavour to select from this almost redundant stream that kind of information which can be rendered the more subservient to their use, and such as will more readily apply to their own future requirements. These examples are such as are obtainable, not in insulated forms in which disease or accident of a rare or eccentric kind present themselves, and which teach nothing beyond the mode of treating that disease and that alone, but rather should be obtained in groups of many cases, the study and observation of which involves important surgical principles, applicable not exclusively to them alone, but to a large class of diseases of various kinds. Cases that present features of specific character, being peculiar to themselves, although less valuable to the student of Medicine, simply because the experience acquired by their treatment is less available hereafter, are not, however, to be neglected. If they teach nothing more, they furnish fresh evidence of the boundless resources of Nature in reconstruction, and of her interest in the extension of human life.

Some of these diseases I have already made the subject of clinical remark in the theatre of the hospital; but I make no apology for their introduction to the notice of the readers of THE LANCET.

The first remarks I make relate to one of the most pressing subjects connected with the practice of surgery,—namely, the question of amputation of limbs for local injuries. This is, perhaps, the greatest of all questions, for it involves serious and permanent mutilation of the body; and, of all subjects of operative surgery, it is that which demands the most deliberate judgment, the highest standard of professional morality, and the broadest and soundest views of the vital forces of the body.

I am persuaded that in proportion as we study disease, and make ourselves familiar with the curative resources of Nature, the greater will be our faith in her power of reparation, and in her desire to exercise it.

If we compare the present with the past, it will not be denied that the conservative principle has gone forth. Injuries that formerly condemned a limb to immediate amputation are now found to be amenable to treatment. Can we suppose ourselves to have reached the goal of perfection in our judgment? Is there nothing left for us to learn? Take the hospitals of the metropolis. Is the knife resorted to in an equal proportion of cases, in all? How stands this question in the provinces? Within four years of the present date, a provincial hospital containing less than one-fifth of the number of patients who sleep every night in St. Bartholomew's, recorded a larger number of amputations within one year than were performed within the same period in the great metropolitan hospital; and when to this description is added the fact, that the hospital in question is situated in a strictly rural, and not in a manufacturing district of England, I may well ask, Where is the standard of surgery by which we are guided in the amputation of limbs? In truth, there exists no standard; and the consequence is, that the limb which is preserved in one hospital or in one locality, is amputated in another. Now, this is a grievance which may be fairly urged against the surgical profession by that large community for whose benefit we profess to have ascertained and adopted the most eligible means of curing diseases and of relieving the consequences of local injuries. It is doubtless a question of difficulty, which can only obtain a solution through the medium of experience. But the means of obtaining this experience are denied to the individual, and can only be obtained in the aggregate. And hence the inconsistency of professional practice, the cause of which forms a very legitimate subject for examination and inquiry.

It would appear to arise from various causes operating upon the mind, and hence determining the conduct of the operator: The first, and perhaps the most impressive in its influence, consists in the different degree of reliance placed by different surgeons on the power and resources of Nature in the cure of diseases. Men adopt different views of the power of the curative art. With some it holds the relation of a *vicegerent;* with others, of a *handmaid.* Our minds are not universally impressed by the conviction, that Nature cures diseases, and not we; and that the province of the surgeon, beyond which he cannot step one foot, consists in removing obstacles in her path. If this wholesome fact were impressed more deeply on the professional mind, would it not instinctively lead to a closer observation, and of necessity to a higher appreciation of her powers? At a period as late as a half a century back, amputations were at least three times more frequent than at present? Why are they now less frequent? Not because severe injuries are wanting, or that diseases have proved universally tractable, but because by the study of physiology we have become, comparatively speaking, familiar with the power which Nature wields, and by the observation of the greater resources of the body than were known to our grandfathers.

Secondly, because I do honestly believe there to exist a higher tone of feeling in the professional mind, a higher appreciation of the value of human life, and a truer sympathy with human suffering. I believe also, that a very general observance will corroborate my own impression, that, as a rule, the greater the experience of the surgeon, the fewer the operations, and, as a necessary inference, his greater reliance upon Nature. I am quite convinced, that these powers have yet to be fully ascertained; and, when tested by the few, they will eventually be acknowledged by the many. This progress of medical opinion is elaborate and slow, but it is not the less sure.

Thirdly, because we have identified our opinions with what I believe to be most erroneous views propounded by our forefather on the subject of what were termed secondary operations. The theory of this almost universal law of surgical practice is this: that it is better for the constitution to bear one shock than two; and no reflecting man will deny it. It, therefore, resolves itself into the necessity of an immediate decision—"Now or never." "Now" saves life, but at the expense of a limb; "Never" risks life, and it is our first duty to preserve it. But this well-sounding theory, although it proclaims truth in the abstract, does not proclaim truth in the application. It is true to the letter, not to the spirit. The exceptions to its application are infinite; strictly speaking, it only applies in full force to cases of extreme injury, such as large contusions, crushings, or lacerations of the limbs, recovery from which is beyond hope or appeal. Consequent on such destruction, the constitution must necessarily sink; and the earlier the amputation, the more probable the recovery, because collapse of the vital powers is the certain issue, and reaction is impossible.

And here let me ask a question not inapposite to the purpose—After what period of time from that of the injury may an operation be undertaken which brings it within the category of the law? At the expiration of how many hours is a primary converted into a secondary operation? By *immediate amputation* I understand the removal of a shattered limb as practised on the field of battle, when the sufferer is removed to the rear for that purpose. But if several hours elapse, do we still retain the term "immediate amputation"? We make no distinction between an interval of one hour and a quarter of a day, on which distinction everything depends. If, then, we lose by distant absence from the case, (a very frequent condition of things,) the advantage of immediate amputation, is it not an additional element in favour of the treatment which appeals to Nature, and which calls upon her to put forth her powers of restoration? Mr. Abernethy used to dwell with much force upon the curative powers of the constitution in cases of compound dislocation of the foot at the ankle-joint. He related three examples of this injury, which he treated successfully after condemnation to the knife by other and eminent surgeons. Had Mr. Abernethy's experience been greater at that period of his life, he would not have made these the only exceptions to a rule that requires far larger limitation.

Several years since, a boy was brought into St. Bartholomew's Hospital with his hand much crushed by a carding machine. The integuments were torn from the back of the hand, and the tendons exposed. The greater part of the palm was also denuded. The two first phalanges of the index and middle finger

were dislocated, and the two others fractured, and all were more or less contused and blackened. The boy was aged about fourteen, and was healthy. I may say that I was somewhat urged to amputate the boy's hand. One thing was quite clear, there was no necessity for immediate amputation. I therefore ordered the limb to be put on a single splint, after I had replaced as well as I was able all the dislocated structures. At the expiration of a fortnight the integument had all separated. Amputation was again suggested, but "respectfully declined." Had there been any danger to this boy's life, it had manifestly passed away. One by one the fingers came away, excepting the thumb, which was uninjured, and one joint of the index-finger. I watched the gradual though slow development of new integument, which formed perfectly over the entire hand, and he left the hospital in five months with a most useful fragment of a limb, that he has since by education rendered subservient to many important duties in life.

In April last, a man, aged fifty-two, was brought into the hospital with dislocation of the left arm at the shoulder-joint, and extensive laceration of the integuments over the lower half of the forearm. The styloid process of the ulna was also knocked off. Three hours elapsed before I saw him. The character of the injury and the general aspect of the limb was such, as I thought, would justify amputation, upon other reasoning than such as influences my mind in the treatment of this and similar injuries. The arm had been reduced by my house-surgeon, Mr. Hodgson. There was no evidence of collapse or prostration. The structures were carefully replaced and covered with cotton-wool, and the arm was laid on a well-padded splint, and I determined to watch the course of events. A first and a second week elapsed without any alteration justifying amputation. I fed the man well, gave him wine and brandy, and small but repeated doses of opium. The integuments sloughed largely on the back of the arm, but his hand was warm and healthy, and he had power of motion in his fingers. Granulations formed largely on the exposed surface. The man ate well and slept well. He had a good pulse, and no pain in the limb, and at the expiration of a month he appeared safe. The wound was now cicatrizing all around. In the fifth week he sank from some cause I could not ascertain, and died.

Possibly this case may be cited as favourable to the doctrines of immediate amputation. Who, let me ask, would not willingly postpone the removal of a limb on a guarantee of five weeks' healthy progress?

A boy, aged twelve, sustained a severe laceration of the right hand. The integuments on the back of the hand were torn down, and the muscles of the thumb rent asunder. Nearly the same amount of injury affected the palmar surface. I determined to postpone amputation until it became imperative. The limb was placed on a splint, and covered with cotton wool. The boy was thoroughly well nourished, and he has recovered, retaining a serviceable limb for life.

In all these cases, I am decidedly of opinion that amputation would have been resorted to but for my own greater reliance upon Nature than others around me, and this alone saved the two, while the third case can hardly be adduced as an exception.

It would be well for the cause both of humanity and of science, if it were possible to draw a definite line, which should determine the confines of reparative power; but it is the very impossibility of doing so which appears in some measure to justify so wide a range in the practice of different surgeons. That there is a line, obscure to our senses though it be, will hardly be disputed by anyone who has deemed the fact worthy of remark how common is the resort to the knife in some districts compared with that of others. And the difficulty of decision is unquestionable, such is the complication of the requisite inquiry. Notwithstanding which, some approach may be attempted to a more general rule, founded on the nature and extent of the injury, than has hitherto guided the hospital surgeon in his decision, although the question of local injury will be subject to large modifications, founded on that of age, sex, the character, and condition of constitution of the affected person.

These examples may be divided into—first, such as *require* amputation; secondly, such as *justify* amputation; and, thirdly, such as neither *require* nor *justify* amputation. One word on the definition of the term "*justify* amputation." To justify may be not to give the reality, but the appearance only, of justice; to obtain the sanction of the world. A man may obtain the warrant of general opinion while he fails to possess his own. He may be safe from comment or criticism, while he is amenable to denunciation *in foro conscientiæ*. By the term "justify," I mean that warrant in favour of the removal of a limb which is obtained from the consideration of an injury placed on the confines of necessity, especially if occurring in early life, in advanced age, or in impaired constitutions.

Of the structures entering into the composition of a limb, one and all of which are the subject of rupture or disorganization, the first importance perhaps justly attaches to the arterial system; but as universal experience teaches us that the channel of the main artery may be suddenly obliterated without danger to the vitality of the limb, so in the rupture of the main arterial trunk, evidenced by the pulseless condition of the limb below, the injury is, *per se*, no warrant for amputation. But if, superadded to the rupture of the main artery, the muscular system at the seat of injury is largely contused or ruptured, and the collateral channels for arterial as well as venous blood are involved in the injury, it is more than probable that the limb will quickly fail in nourishment, the indication of which is obtained from the loss of temperature. This loss, if complete, will become apparent in the course of an hour or two. But the loss is rarely complete, and several hours, or even a day, may be required to determine the affirmative of the mischief done, on this evidence. But it is all-important evidence, and fully justifies the postponement of the decision.

Next in importance to arteries, and in close relation to them, stands the nervous system; and in reference to injury to the chief nerve or nerves the same remark will almost apply. We do not amputate the leg because the sciatic nerve is rent asunder. The true principles of surgery would dictate a pause—a period for watching and observation. But as the rupture, whether of artery or nerve, is commonly a matter of uncertainty, we can only judge by consequences, and for these we should wait.

To justify amputation, from rupture or laceration of the muscular system of a limb, the injury must be very great, because the constitution does not sustain a shock in proportion to the extent of the injured surface, supposing the integuments to remain unbroken: but if the muscles be largely torn, and the investing integuments detached, and not susceptible of entire, or nearly entire replacement, I confess such an injury would justify a doubt as to the power of Nature to restore the parts to health. I speak of very large laceration, with contusion of muscle, coupled with separation of integument and extravasation of blood.

I do not concur with many surgeons, who deem exposure of the cavity of a joint an important element of failure. I am quite aware that it is so generally deemed, and I recall to my recollection the early part of my own professional life, when a compound dislocation of a joint alone was deemed a warrant for the amputation of a limb. But I can bear witness to many cases of recovery as regards the limb, and a few of recovery to the joint itself.

Undue importance appears to me to be attached also to fracture into a joint, as though such fracture, in reference to the retention of a useful limb, raised a serious obstacle to recovery. That it places the joint in jeopardy I readily allow, but I do not believe that the advocate for amputation in any given case can derive from its presence an argument of great force, although I do not deny that it should always be considered an aggravation of the mischief done. The same remarks will apply to fracture of the bone, especially if comminuted, when superadded to the larger injury of rupture of the main artery, or of the main nerve, extensive rupture of muscles, or laceration and disorganization of the integuments.

I have never yet observed much advantage to accrue to the patient from the introduction of the finger through an opening in the skin, which is employed as an explorer, and carried round in all directions, for the purpose of ascertaining the nature and extent of the injury done. I have never, myself, acquired much knowledge by this process, which could be rendered available to the service of the patient, nor have I known it to be obtained by others. To the patient himself, so far as he is entitled to an opinion, it has always appeared to be positively objectionable. To be sure, it gratifies curiosity, though at some expense of suffering.

Finally, in all doubtful cases, I would give the benefit of the doubt to the patient, and endeavour to restore the limb. If, consequent on a large injury to the leg or thigh, upper arm or forearm, the foot or hand lose their natural warmth, amputation is the only resource. If we find extensive laceration of muscles, with extensive separation of integument, and especially if the integument be disorganized and insusceptible of replacement, I fear we must amputate, even without waiting for the above evidence of loss of vitality in the extremity; but, in a subject moderately healthy, I do not consider that any degree

of comminution of bone or laceration of muscles, unless very extensive, any fracture into a joint, or compound dislocation of a joint, can justify the abandonment of the case, so long as the structures are capable of some general replacement, and the patient can submit without suffering to the restraint necessary to his recovery.

Grosvenor-street, September, 1856.

REPORT OF

THREE SUCCESSFUL CASES OF WÜTZER'S OPERATION FOR THE RADICAL CURE OF REDUCIBLE INGUINAL HERNIA.

BY CHAS. VAUDIN, ESQ., M.R.C.S., Jersey.

CASE 1.—Monsieur le T——, aged forty-two, consulted me for an oblique inguinal hernia of the left side, which caused him much inconvenience. Upon examination, I discovered a strong tendency to the same affection on the right side. Being a remarkably healthy person, of temperate habits, I recommended Wützer's procedure to him, he being extremely anxious to be radically cured of this affection.

A brisk purgative of calomel and jalap having been given to him two days previously, on the 12th of May, the instrument was introduced, the plug coated with firm grease, and all the hair on the part to be invaginated plucked away. The needle was not protruded before I had the plug firmly in the canal, and in so doing, I managed to transfix the internal pillar of the external ring, or the structures immediately behind it, so that I was quite sure the integumental plug might be firmly opposed to the parts until it fairly adhered to them.

The patient kept his bed eight days, during which time I removed the plug once, wiped it and applied fresh grease, and returned it. The pressure of the instrument he regulated himself according to his feelings, so that he always felt it comfortably firm. Not a single unpleasant symptom occurred.

On the ninth day, the instrument was removed; a compress of oiled lint and a T-bandage was applied. He sat up the three following days a few hours each day, and then gradually resumed his former habits.

On the fourteenth day, the wound made by the stylet was quite healed; he preferred the bandage to a truss, and it was applied every day up to the twenty-eighth, when, the parts being so firm and well consolidated, the impulse on coughing being no more perceptible than in the normal condition, I enjoined him to wear a suspensory bandage, and to abstain from any exercise demanding extraordinary respiratory efforts.

Up to this period (Sept. 2nd) he is, as well as myself, perfectly satisfied with the results of the operation, and wishes to be operated upon on the other side, even before the hernial descent is complete, a proceeding I have of course advised him to leave until circumstances render it more requisite.

At the request of my friend, Mr. G. M. Jones, I append the two following cases, he having kindly furnished me with his notes of them.

CASE 2.—N. N——, aged thirty-six, a labourer. Had inguinal hernia of the right side of eight years' standing, caused by lifting a heavy weight. He was a man of very intemperate habits. He had occasionally worn a truss, but only for a few days at a time. Trusses given to him by institutions were always sold in a few days, to procure drink. He was operated on January 5th, 1856. The instrument was removed on the ninth day. He remained in hospital six weeks, and wore a truss during that time. He was seen for the last time two months ago, and was then quite drunk. Had sold his truss the day after his discharge, and had not worn one since. He was examined then, and anxious to prove how well he had recovered, nothing would satisfy him but coughing as loud as he was able, and jumping from a shop counter on his feet; this he did several times.

CASE 3.—Thomas G——, aged fifteen, a Canadian; oblique inguinal hernia, two years. Operated on the 1st of April, 1856. The instrument remained in eight days, followed by no unpleasant symptom. The patient was heard of two months ago, and was then pursuing the active duties of a cabin boy, and wore no truss.

The paper by Mr. Wells in the "Medico-Chirurgical Transactions," vol. xxxvii., affords information to those desirous of testing the merits of this new proceeding. In conclusion I will add, that it has struck me in my observation of these three cases, that only just sufficient pressure should be applied, by means of the upper plate and screw, to keep the parts in close apposition. Undue pressure not only gives severe pain, but produces a retardation of the union process. I would suggest, also, the liberation, by incision, of the margins of the invaginated integument, including the dartos and cremaster; the action of these, even independent of that of the other perineal muscles, in ordinary and extraordinary respiratory efforts, seems to have a tendency to draw upon the integumental plug; hence I am led to think this liberation might be an improvement, and mean to give it a trial. Adhesion of the parietes of the plug might also be a desirable occurrence, and this could be effected by the actual cautery, or the chloride of zinc.

Mr. Coxeter kindly modified the instrument for me in the following way:—The needle, or stylet, was strongly gilt to prevent its corrosion, and its extremity eye'd to allow of its more secure fixture to a cork. The handle was also made to unscrew, so as to prevent its entanglement in the patient's dress, or in any movements.

St. Helier's, Sept. 1856.

THIRD QUARTERLY METEOROLOGICAL REPORT AT ST. THOMAS'S HOSPITAL FOR 1856.

BY ROBERT DUNDAS THOMSON, M.D., F.R.S.L. & E.,
PROFESSOR OF CHEMISTRY IN ST. THOMAS'S HOSPITAL COLLEGE, VICE-PRESIDENT OF THE BRITISH METEOROLOGICAL SOCIETY, ETC.

THE atmosphere has been characterized during the quarter by a lower mean pressure than in the two preceding years. This is peculiarly exemplified in September, which afforded in 1854 and 1855 a mean elevation of the barometer of above 30 inches, while in the past month its average height was 29·793. September, which in the two preceding years was a dry month, yielding respectively ·65 and 1·15 inches of rain, with 5 and 7 rainy days, has this year afforded a rain-fall of 2·07 inches, and 11 rainy days. This result has been obviously connected with the south-westerly wind, which has predominated during the quarter. The greatest rain-fall was ·83 inch in twenty-four hours, on the 16th of August.

The mean temperature of July was less than last year, while that of August was higher, respectively 63°·9 and 65°·4; that of September was, however, lower, 57°·5 and 56°·2. The mean temperature of the whole quarter was nearly the same as last year, 61°·5 in 1855, and 61°·2 in the present year; the average for 65 years was 60°·6. The thermometer on 12 days rose above 80°, a circumstance which only occurred once in the corresponding quarter of last year. The maximum temperatures occurred on the 23rd, 30th, and 31st of July, the 1st, 2nd, 3rd, 4th, 7th, 10th, 11th, 12th, and 13th in September; the heat on these days being respectively, 83°·8, 82°·2, 85°·7, 86°, 88°·2, 86°·8, 82°·8, 80°·4, 80°·5, 84°·7, 81°·2, 83°·3. It is to this elevated temperature that may be ascribed the predisposition te infantile diarrhœa, which was so fatal during the middle of the quarter, particularly in the parish of Marylebone, where it seems to have assumed the form of an epidemic, upwards of 300 cases having been attended by the parochial surgeons alone. At one period, indeed, some of the symptoms of a choleraic accession were threatened; but these gradually moderated with the depression of the maximum temperature, which descended in the course of a few days about 20°, since on the 13th of August the highest thermometer stood at 83°·3, and on the 18th, at 63°·4, equivalent to a fall of 19°·9.

October, 1856.

QUEEN'S COLLEGE, BIRMINGHAM.—The annual dinner of the students of Queen's College was held at the Union Inn, Union-street, on Thursday, the 2nd inst. There was a very numerous attendance of visitors. The chair was occupied by Mr. Josephus A. Williams, the student who has gained the most distinction during the year, having carried off the gold medal of the London University. After the usual loyal toasts, the chairman, in an appropriate speech, proposed "Prosperity to the Queen's College," which was responded to with great warmth. In reply to various toasts, the company was addressed by Drs. Davies and Heslop, and by Messrs. Bolton, Neale, Cox, Crampton, &c.